

## Reviews

**POLAR BEARS: LIVING WITH THE WHITE BEAR.** Nikita Ovsyanikov. 1996. Shrewsbury: Swan Hill Press. 144 p, illustrated, hard cover. ISBN 1-85310-807-3. £19.95.

The remote Ostrov Vrangelya and Ostrov Geral'd, nestled in the Chukchi Sea, loom on the edge of scientific literature as areas of amazingly high concentrations of polar bears and walrus. In *Polar bears: living with the white bear*, Nikita Ovsyanikov shares his account of his research on polar bears, conducted between 1990 and 1994 using highly unconventional methods.

The introduction provides a brief overview of the ecology of polar bears and of the study area. Inaccuracies, such as the map illustrating denning areas of polar bears, reflect a failure to thoroughly consult the scientific literature. The first chapter is a travel narrative of an overland trip to the study site. Full of interactions with bears, it is light entertainment and fun to read. In the second chapter, 'A spit full of bears,' the author sets the stage for his research. Ovsyanikov, wanting to 'interact with them [polar bears] as one animal to another,' does not carry a firearm. Walking through an area with up to 140 polar bears obviously requires some fancy work, which Ovsyanikov outlines in detail, acting as a 'bear of the highest social rank.' Chapter three delivers an extended account of an encounter with one bear named 'Grandfather.' After umpteen encounters, this reviewer began to worry that the research was actually largely how to behave around polar bears.

Interesting observations and excellent photographs make chapter four, 'The great walrus hunt,' the book's main attraction. Ovsyanikov describes 35 predation attempts by polar bears on walrus at Cape Blossom, where up to 60,000 walrus congregate. However, with information on only two successful kills of walrus calves, I was left wondering if polar bears ever kill adult walrus. The theory proposed, that 'a walrus that is repeatedly attacked and wounded is well on its way to an early demise...So the hunter who takes risks is actually working to feed the whole polar bear community,' caused my scientific hackles to bristle. I had hoped for more insight on Russian research of polar bears, but I will have to wait.

In chapter five, 'Giants at sea,' the reader gets an account of interactions between polar bears and walrus in the water, as well as some interesting observations about natural history. In the following chapter, I got the feeling that the western scientific literature was not consulted by the author, because arguments for the 'social ice bear' are presented as new. Anecdotal accounts continue to be entertaining, but lack context that makes them interesting in a broader ecological and evolutionary framework. In chapter seven, Ovsyanikov goes to Ostrov Geral'd for three weeks of observations of pregnant females entering

dens. With little data presented, I wondered what he had discovered. The adventure replaces the polar bear as the centre of attention. In the following chapter, he returns to Ostrov Geral'd for the den emergence period. Here the reader is introduced to 'Professor,' 'Snowflake,' and 'Snow Queen,' players in a study on territorial organisation of female polar bears in a denning area. Scattered throughout are unique and interesting observations of den emergence and females competing for dens. In chapter nine, one can glean a few details on the breeding behaviour of mated pairs. However, statements like 'polar bears are known to have the most sensitive nose in the animal kingdom' are presented as established fact. Certainly polar bears have an excellent sense of smell, but whether or not it is the best in the animal kingdom remains to be determined. Observations of cubs swimming in open leads during their first days on the sea ice provide new insights in polar bear-habitat relationships.

In the final chapter, the reader gets another human-bear encounter story. Dramatic and fortunate for Ovsyanikov in its outcome, I wondered how much disturbance of the bears was required. In the conclusion, 'Persecution and protection,' the reader is warned that 'making them tolerant of humans may also make them vulnerable to humans.' Is this not what Ovsyanikov has done? Ecological conditions on Ostrov Vrangelya are unique. Under other conditions, and at other times of the year, polar bears behave rather differently. Extrapolating from one period of the year to another is dangerous.

The main strength of the book lies in its excellent photographs of polar bears in ecological conditions uncommon in other venues. The text is a simple account of the author's field observations in one area of the Russian Arctic, filled with a series of anecdotal observations. The author at times draws conclusions not supported by data but rather by getting 'personally acquainted with individual animals.' The book offers some new insights into the ecology of polar bears, but suffers from lack of context. A reader would not understand the natural history of polar bears from this book alone. Ovsyanikov makes broad generalisations based on his observations under ecological conditions unlike those found in other areas. The author's experiences bias his interpretations of findings from other areas. Based on his experience, for example, adult males do not kill cubs, and he discounts observations from other areas. However, infanticide has been documented, and Ovsyanikov's opinions are misleading.

Many of the stories told about the trials of field research in the Arctic would be familiar to other researchers, but such stories are infrequently conveyed in a popular format; this book in some measure helps to fill this niche. On the frustrating side, however, is that the author discusses the

objectives and methods of his research but fails to provide the results. Those looking for an overview of the natural history of polar bears will not find it here. While not destined to be a scientific reference, the book is a readable account of polar bears in one corner of the Russian Arctic and well deserves to be added to the library of any ardent admirer of polar bears. (Andrew E. Derocher, Norsk Polarinstitut, Storgata 25, Postboks 399, N-9001 Tromsø, Norway.)

**QUATERNARY AND GLACIAL GEOLOGY.** Jürgen Ehlers. 1996. Chichester, New York, Brisbane, Toronto, and Singapore: John Wiley and Sons. xii + 578 p, illustrated, hard cover. ISBN 0-471-95576-0. £75.00.

For about a decade there was only one general text devoted to the subject of glacial geology, Drewry's *Glacial geologic processes* (now out of print). Then, Hambrey's *Glacial environments* (1994), Menzies' *Glacial environments* (two volumes, 1995 and 1996) and Bennett and Glasser's *Glacial geology: ice sheets and landforms* (1996) arrived in quick succession to widen the choice of texts for those wishing to teach and research in glacial geology and geomorphology, and in related topics such as stratigraphy, sedimentology, and palaeoenvironmental reconstruction. Now, a further text dealing with glacial geology has become available: *Quaternary and glacial geology*. This text has been translated by Philip Gibbard from *Allgemeine und historische Quartärgeologie*.

Rather than duplicating the intentions, subject matter, and scope of the three previously mentioned texts, *Quaternary and glacial geology* stands apart from them in several important ways. Not the least of these is price, which, at £75, is substantially greater than either Hambrey or Bennett and Glasser's volumes, both of which were approximately £20. On the other hand, it is immediately apparent that, at 578 pages, *Quaternary and glacial geology* is a more substantial text, 91 pages of which comprise a very comprehensive and up-to-date reference list (which probably forms a useful resource in its own right). However, the main feature distinguishing this text from the others is its broader scope, specifically its discussion of non-glacial Quaternary sedimentary and geological processes (comprising 67 pages out of 217 on general Quaternary geology), and its regional accounts of Quaternary stratigraphy and history (comprising 153 pages out of 221 on general Quaternary stratigraphy).

The text is divided into four sections: 'General Quaternary geology,' 'Quaternary deposits and landforms,' 'Quaternary stratigraphy,' and 'Perspective.' There are 213 black-and-white photos, maps and diagrams, and 12 tables. 'General Quaternary geology' commences with an introduction to the traces and causes of ice ages, including an interesting historical perspective on ice-age theories, an account of orbital theory, and brief outlines of potential terrestrial mechanisms such as continental distribution and ocean circulation, volcanism, orogeny and atmospheric circulation, and chemical weathering and CO<sub>2</sub>

drawdown. It then moves on to deal with glacier dynamics, emphasising ice-sheet formation and reconstruction. The second section deals with Quaternary deposits and landforms, with the following subsections: glacial deposits and landforms, meltwater deposits and landforms, periglacial deposits and landforms, terrestrial interglacial environments (vegetation, fauna, soils, and the impacts of human activities, the last discussing archaeological evidence), marine environment, and methods of investigating glacial and interglacial deposits. The last subsection deals with biological remains (macroscopic plant remains, pollen and spores, diatoms, mammals, molluscs, beetles, foraminifera, and ostracods) in addition to sedimentary morphology and mineralogy.

Section III deals with Quaternary stratigraphy, with the following subsections: principles of stratigraphy (including chronostratigraphy, lithostratigraphy, and biostratigraphy) and dating Quaternary deposits (oxygen isotopes, magnetostratigraphy, radiocarbon, potassium/argon, thorium/uranium and fission-track dating, thermoluminescence, optical-stimulated luminescence and electron-spin resonance, beryllium and amino-acid dating, and varves). The section then deals with regional Quaternary histories: Quaternary stratigraphy of northern Europe, Quaternary history of the Alps, Quaternary history of North America, Quaternary history of the rivers (Danube, Rhine, Thames, Mississippi, those in Siberia, and general Holocene (postglacial) fluvial development), and loess stratigraphy. The final section provides a concise overview of the entire volume and a brief concluding statement on future research directions. The conclusion stresses the continuity of Quaternary processes with current and future environmental change: 'Quaternary research does not deal with a random period of the Earth's history but with the period in which we live...Because of strong anthropogenic alteration of the atmospheric composition during the last 100 years questions about the impact of those changes on climate and sea level have focused current investigations. A considerable contribution to answering these questions must come from Quaternary research' (page 455).

Some minor specific shortcomings can be identified, for instance the erroneous suggestion that ice shelves are present in Spitsbergen, and, more substantially, a lack of references in the discussion of ice sheets to the current, lively, and important debate on the stability of the East Antarctic ice sheet, which subsumes evidence from a variety of Quaternary disciplines (for example, Barrett and others 1992; Sugden and others 1993). In places, the text betrays its origins as a translation with some awkward constructions, but this is not a significant distraction as it remains readable throughout, surely something of an achievement for a relatively specialised, translated text.

On the whole, *Quaternary and glacial geology* has as much in common with texts such as Lowe and Walker's *Reconstructing Quaternary environments* (1984), Dawson's *Ice age Earth* (1992), and Williams, Dunkerley, De Deckker, Kershaw, and Stokes' *Quaternary environ-*